

CLAIMS

What Is Claimed Is:

1. A chain comprising:

a first link comprising

5 a first member comprising

a female end, and

a male end, and

a second member comprising

a female end opposing the female end of the first member,

10 a male end opposing the male end of the first member; and

a second link comprising:

a first member comprising

a female end receiving the male end of the first member of

the first link, and

15 a second member comprising

a female end opposing the female end of the first member

of the second link and receiving the male end of the second member of the

first link, and

a male end opposing the male end of the first member of

20 the second link,

wherein the male ends of the first link are rotatable relative to the female ends of the second link and form a pivot bearing connecting the first link and the second link.

2. The chain of Claim 1, wherein the female end of the first member of the second link comprises a boss extending toward the female end of the second member of the second link and the female end of the second member of the second link comprises a boss extending toward the female end of the first member.

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3. The chain of Claim 2, wherein the male end of the first member of the first link extends through the boss of the female end of first member of the second link and the male end of the second member of the first link extends through the boss of the female end of the second member of the second link.

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4. The chain of Claim 3, wherein the female ends of the second link are maintained in spaced apart relation.

5. The chain of Claim 2, comprising a track-contact member around the bosses of the female ends of the second link.

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6. The chain of Claim 5, wherein the track-contact member is rotatable relative to the bosses of the female ends.

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7. The chain of Claim 6, wherein the track-contact member is a wheel.

8. The chain of Claim 6, comprising an annular bearing positioned between the bosses of the female ends of the second link and positioned between the male ends of the first link and the track-contact member.

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9. The chain of Claim 1, comprising a pin connecting the male end of the first member of the first link and the male end of the second member of the first link.

10. The chain of Claim 9, wherein the male end of first member of the first link contacts the male end of the second member of the first link.

11. The chain of Claim 1, wherein at least one of the first link and the second link is molded from a polymer composition.

12. The chain of Claim 11, wherein said polymer composition is fiber reinforced, said fibers being aligned in the direction the load is applied to the chain.

13. The chain of Claim 12, wherein said polymer composition comprises a polyarylamide as a matrix for said reinforcing fibers.

14. The chain of Claim 11, wherein said polymer composition comprises at least one member of the group consisting of polyurethanes, polyamides, polyamide-imides and polyesters.

15. The chain of Claim 13, wherein said reinforcing fibers are glass fibers.

16. The chain of Claim 12, wherein said reinforcing fibers are at least one member of the group consisting of glass fibers, carbon fibers, and aramid fibers.

17. A chain comprising:

a first link comprising a first member having a male end comprising a boss extending perpendicular to a plane in which the first member rotates; and

a second link comprising a first member having a female end receiving the boss of the male end, wherein the female end pivots about the boss.

18. The chain of Claim 17, comprising a sleeve bearing between the boss and female end.

19. The chain of Claim 17, comprising a track-contact member around the boss.

20. The chain of Claim 17, wherein the female end comprises a boss extending parallel to the boss of the male end.

21. The chain of Claim 20, comprising a pin positioned through the boss of the male end wherein:

the first link comprises a second member opposing the first member of the first link;

the second link comprises a second member opposing the first member of the second link; and

the pin connects the male end of the first member of the second link to the second member of the second link.

22. A member for a link in a chain adapted to connect to an adjacent link in the chain, the member comprising:

a female end;

a middle portion connected to the female end; and

5 a male end connected to the middle portion and comprising a boss extending perpendicular to a plane in which the middle portion rotates, wherein the boss is of a predetermined size to connect to the adjacent link.

23. The member of Claim 22, wherein the member is molded from a
10 composition comprising...

24. The member of Claim 22, wherein the middle portion is sufficiently elastic to bend the male end into alignment with the adjacent link and allow the male end to return to an undeformed orientation.

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25. The member of Claim 22, wherein the middle portion comprises an I-shaped cross-section.

26. The member of Claim 22, wherein the middle portion comprises a rib
20 running lengthwise between the female end and the male end.

27. The member of Claim 26, wherein the rib comprises one or more bosses extending from the member away from the boss of the male end.

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28. A chain comprising:

a first link having a protruding integral portion extending perpendicular to a plane in which the first link rotates; and

a second link pivotally connect to the protruding integral portion of the first link.

29. A chain comprising:

a first link comprising first and second opposing members comprising opposing first and second male end bosses; and

a second link comprising first and second opposing members comprising opposing first and second female end bosses, the female ends respectively receiving the first and second male end bosses, wherein the female ends pivot relative to the male ends.

30. The chain of Claim 29, comprising a pin connecting the first and second male end bosses.

31. The chain of Claim 30, comprising an annular bearing between the first and second female end bosses.

32. The chain of Claim 31, comprising a wheel positioned around and rotatable relative to the first and second female end bosses, wherein the annular bearing is positioned between the wheel and the first and second male end bosses.

33. The chain of Claim 32, comprising a sleeve bearing between the first and second male end bosses and the first and second female end bosses.

34. The chain of Claim 30, wherein the annular bearing is positioned at an intersection of the first and second male end bosses.

5 35. The chain of Claim 29, comprising a sleeve bearing between the first and second male end bosses and the first and second female end bosses.

36. A chain comprising:
a molded first link comprising a male end having a predetermined outer diameter;
10 a molded second link comprising a female end having a predetermined inner diameter; and
an integrally molded pivot bearing formed by nesting the diameters of the male and female ends.

15 37. The chain of Claim 36, comprising a lubricated sleeve bushing between the male and female ends of the first and second links.

38. A chain kit comprising:
a first member comprising a female end and a male end having a boss;
20 a second member substantially identical to the first member;
a third member substantially identical to the second member; and
a fourth member comprising a female end substantially identical to the female end of the first member and a male end having a boss, the male end being substantially identical to the male end of the first member, and
25 wherein:

the fourth member comprises carriage-connecting structure between the female end and the male end; and

the female ends are adapted to receive the bosses of male ends to form an integral pivot bearing between adjacent members.